Germany's relative position in the central and east European countries in transition

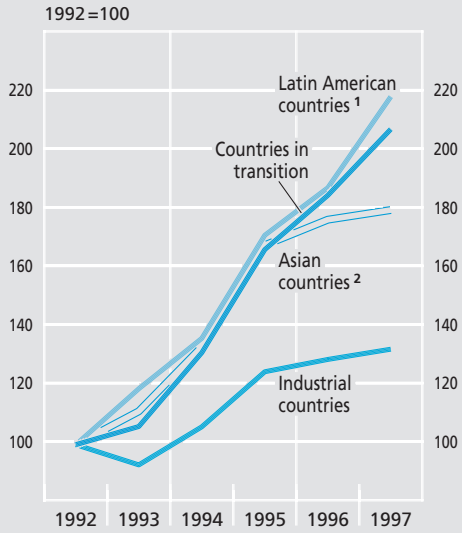
The former central and east European planned economies have made considerable progress in liberalising and expanding their foreign trade relations since the beginning of the reform process in the early nineties. From the outset, Germany has held a strong position in the markets of the countries in transition. Its predominance is generally explained by its proximity to the countries in transition and the greater size of its economy compared with its immediate west European competitors. Yet in addition to these natural advantages, there are a number of other factors which are apparently helping to strengthen Germany's competitive position in eastern Europe. The following article focuses on the importance of Germany's direct investment in the region and the specific range of goods it exports and examines how changes in Germany's price competitiveness relative to its main competitors among the industrial countries have affected German exports to the countries in transition.

Opening-up of the countries in transition and Germany's relative position in the region

Rapid expansion of trade relations

After the collapse of the system of economic planning, the countries in central and eastern Europe expanded their trade with the rest of the world in a relatively short time despite shortfalls in production at home which were,

Imports of the countries in transition compared with other groups of countries



1 Argentina, Brazil, Chile, Colombia, Peru and Venezuela. — 2 Singapore, Hong Kong (China), South Korea, Malaysia, Thailand, Philippines and Indonesia. — Data source: IMF, DOTS Statistics.

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in some cases, substantial. This development was fostered not least by the fact that, in contrast to many other fields, the reforms in foreign trade progressed rapidly. In 1995, most of the countries analysed in this article[1] were, in principle, market economies with free foreign trade and convertible currencies for payment transactions. Only Russia still controls foreign trade and retains government trade monopolies, especially on the export side.[2] Most of the countries in transition were able to exploit their competitive advantages arising from lower labour costs and to reorganise their production, increasing their exports substantially by about 100 % between 1992 and 1997. At the same time, however, their imports increased at a considerably higher rate. Calculated in US dollars, the value of the goods imported by the 11 countries in transition analysed in this report increased by almost 110 % in the period from 1992 to 1997, i. e. almost as strongly as the imports of the emerging markets in Latin America (120 %) and at a markedly faster rate than the imports of the emerging markets in South-East Asia (80 %) and the industrial countries (just over 30 %). Only the – in part dramatic – deterioration in the countries' current accounts and the related financing problems put a damper on the growth in imports.

Increasing openness …

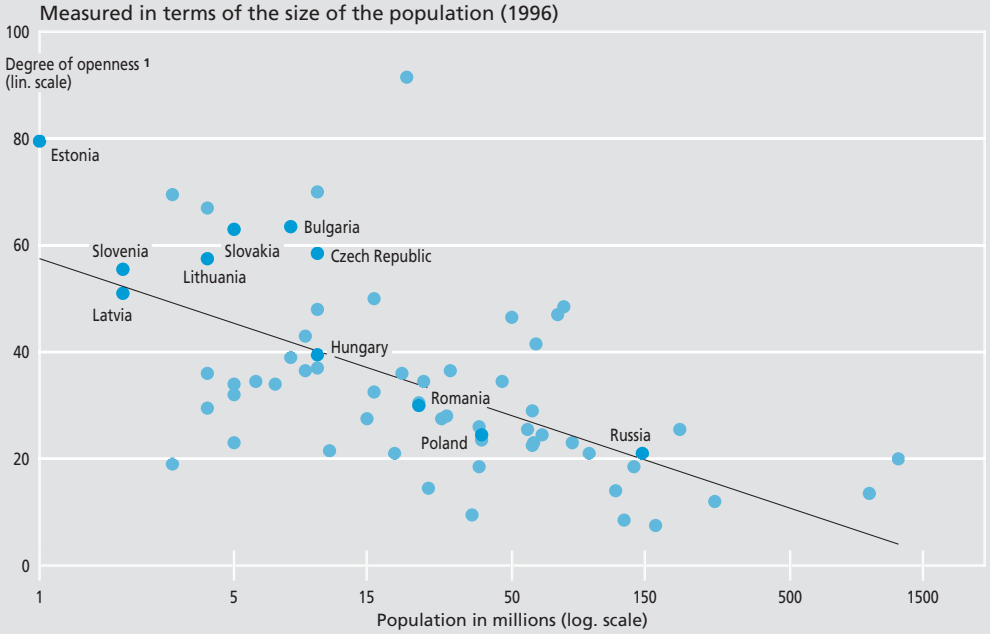
Owing to the rapid increase in foreign trade coupled with weaker domestic growth or even contracting domestic economies, the extent to which the countries in transition opened up their markets, calculated as the average of exports and imports of goods in relation to gross domestic product, increased substantially in the nineties. Measured in these terms, most of the countries in transition were even more open in 1996 than many industrial countries and emerging markets of comparable size. This is evident in the

1 This article analyses 11 central and east European countries in transition which play a major economic and political role and for which dependable and informative macroeconomic data are available, at least since 1993. The countries examined are the seven states loosely joined in the Central European Free Trade Association (CEFTA) (Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia), the three Baltic states (Estonia, Latvia, Lithuania) and Russia.The group of countries examined in this article is therefore not fully identical to the group of central and east European countries in transition which is regularly analysed by the Bundesbank and which additionally contains several successor states to the former Soviet Union and Yugoslavia as well as Albania. See, for example, Deutsche Bundesbank, Recent trends in Germany's economic links with central and east European countries in transition, Monthly Report, July 1996, pages 29–44.

2 For the progress made in liberalising foreign trade see World Bank, World Development Report 1996 and EBRD, Transition Report 1998, London, page 25 ff.

External interdependance as a function of the size of an economy *

Measured in terms of the size of the population (1996)



* Sixty-four industrial countries, countries in transition and emerging markets (excluding Hong Kong and Singapore). — **1** The degree of openness is defined as the average of exports and imports divided by the gross domestic product. — Data source: The World Bank, World Development Report 1998/99.

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above chart, which shows the degree of openness of 64 industrial countries, emerging markets and countries in transition as a function of the size of their respective economies, from the fact that most of the countries in transition are situated above the regression line. As in the group of industrial countries and emerging markets, the smaller states among the countries in transition also tend to exhibit stronger external links than the larger ones. The Estonian economy, the smallest of the countries in transition examined in this report, achieved a degree of foreign integration of 80 % in 1996; Russia, the largest of the countries under review, had a degree of openness of 20 %.

The increasing integration of the central and east European countries in transition into the global production process has also led to a growth in their share of world trade, which rose from an estimated 2 ½ % at the beginning of the nineties to almost 4 % in 1997.[3] Their trade with the western industrial countries expanded the most strongly. Several of the countries whose reforms have advanced especially well – such as Estonia, Hungary, Poland and Slovenia – are already conducting more than two-thirds of their foreign trade with western industrial countries.

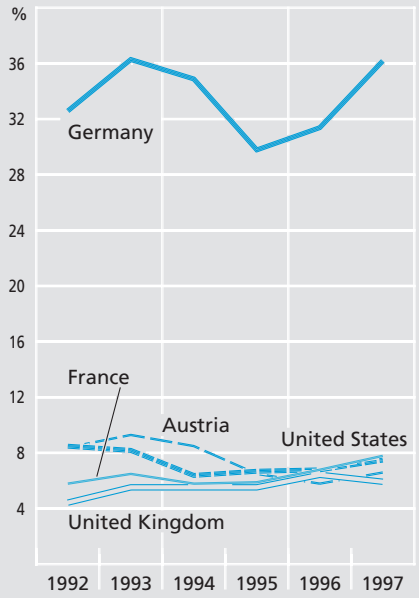
... and growing share of world trade

Even before the collapse of the system of economic planning, Germany was the most important western trading partner of the former CMEA states; on average, Germany accounted for an estimated one-third of their imports

Germany as most important trading partner

3 See International Monetary Fund (IMF), World Economic Outlook, October 1998, page 160.

Selected countries' shares in the imports of the countries in transition from industrial countries



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from western countries. In the nineties, as the countries in transition substantially expanded their imports, Germany was able to hold on to this position and even improve it in the case of several countries. German exports to these countries increased from DM 23½ billion to DM 91½ billion between 1992 and 1998; this corresponds to an annual increase of just over 25%. A significant downturn in German exports to the region did not occur until the second half of 1998 in the wake of the crisis in Russia, which also affected other central and east European countries in transition.

Industrial countries' market shares in the countries in transition

From 1992 to 1997, Germany's average market share of the imports of the countries in transition from industrial countries amounted to around 34%, exceeding the share of Austria, France, the United States and the United Kingdom taken together. The United States, for example, accounted for a share of only 7½% in this period, and the share is falling. Austria, although considerably smaller, accounted for a similar market share, while the average shares of France (6½%) and the United Kingdom (5½%) were somewhat smaller still.

The influence of distance and economic size on Germany's relative position in the countries in transition

Germany's "natural" competitive advantages in central and eastern Europe

Germany's comparatively strong position in eastern Europe is generally explained by its proximity to these countries and the greater size of its economy compared with that of its immediate west European competitors. It is not only the lower transport costs that play a role in this context. The greater the distance to the potential sales territory in central and eastern Europe, the higher the costs of opening up and securing the market are for suppliers from other industrial countries. Consequently, countries such as Germany that are closer geographically to the central and east European markets have a "natural" advantage, so to speak.

Influence of the relative size of an economy on foreign trade

While the distance of a potential supplier is therefore likely to have a negative impact on the volume of trade, the imports of the countries in transition from a given industrial country can be expected to increase in proportion to their own economic size and that of the exporting country. A country's economic size can be measured by its gross domestic prod-

A simple gravity approach for explaining the regional import patterns of the countries in transition

In gravity models, different countries' regional foreign trade patterns are explained, above all, by the distance and economic size of the countries conducting trade with one another. [1]

The generally applied basic model is: [2]

$$IM_{ij} = \alpha_0 Y_i^{\alpha 1} Y_j^{\alpha 2} D_{ij}^{\alpha 3} \mu_{ij}$$

where:

IM_{ij} = value of imports of country in transition i from industrial country j
Y_i, Y_j = gross domestic products of the two countries
D_{ij} = distance between the two countries
μ_{ij} = disturbance term

In logarithmic form, the above equation can also be written as follows:

$$im_{ij} = \alpha_0 + \alpha_1 y_i + \alpha_2 y_j + \alpha_3 d_{ij} + \mu_{ij},$$
$$\qquad\qquad >0 \quad >0 \quad <0$$

The variables carry either a plus or a minus sign, depending on which influence is to be expected on the basis of theoretical considerations.

In most empirical studies, the results of such gravity estimates aimed at explaining regional trade flow patterns are relatively satisfactory. Furthermore, in the past few years, it has been possible to improve the theoretical foundations of the model, which had previously been founded more on intuition. [3]

The regional distribution of the imports of the 11 countries in transition under review from 14 industrial countries was estimated using the above basic model. [4]

The data on the imports of the countries in transition from the industrial countries are annual figures for 1997 in US dollars taken from the IMF's Direction of Trade Statistics. [5] The distances between Germany and the other countries were calculated using a distance calculator available on the Internet. [6] The data on gross domestic product were taken from tables issued by the World Bank.

The results of the estimates show that both the gross domestic product (of the importing and the exporting country) and the distance between the trading partners have a significant influence on the regional pattern of the imports of the countries in transition from the industrial countries under review:

$\alpha_0 = 6.60$ (14.97)
$\alpha_1 = 0.83$ (18.42)
$\alpha_2 = 0.86$ (16.56)
$\alpha_3 = -1.27$ (– 16.95)

Corr. $R^2 = 0.83$

Standard error = 0.56

1 See, for example, Vittas, H., Mauro, P., Potential Trade with Core and Periphery: Industry Differences in Trade Patterns, in Black, S. W. (ed.), Europe's Economy Looks East. Implications for Germany and the European Union. Cambridge *et al.* 1997, page 66 f. — **2** See Bergstrand, J. H., The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence, Review of Economics and Statistics, Vol. 67, 1985; Schumacher, D., Impact on German Trade of Increased Division of Labor with Eastern Europe, in Black, S. W. (ed.), Europe's Economy Looks East. Implications for Germany and the European Union. Cambridge *et al.* 1997, and Frankel, J. A./Romer, D., Does Trade Cause Growth?, American Economic Review, Vol. 89, June 1999. — **3** See, for example, Deardorff, A. V., Determinants of Bilateral Trade, Does Gravity Work in a Neoclassical World?, NBER Working Paper 5377, December 1995; Evenett, S. J., Keller, W., On Theories Explaining the Success of the Gravity Equation, NBER Working Paper 6529, April 1998, and Feenstra, R. C., Markusen, J. R., Rose, A. K., Understanding the Home Market Effect and the Gravity Equation: The Role of Differentiating Goods, CEPR Discussion Paper No. 2035, December 1998. — **4** In the light of the data available, the three Baltic states were treated as one region, reducing the number of countries in transition from 11 to nine. The 14 industrial countries analysed are: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States. — **5** IMF, Direction of Trade Statistics, Quarterly, March 1999. — **6** The distance calculator can be found at http://www.groupweb.com/schdir/travel/distance.htm. For Germany, Frankfurt was taken as the "economic" centre. Since it was not possible to define an economic centre clearly for most of the other countries and many of the cities in question for these countries were not available in the program, the distance calculations (in kilometres) for them were based on the respective capital cities for the sake of simplicity. Of course, this method can lead to distortions in some cases.

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uct. Other things being equal, a country will import all the more goods the higher its income level is. Its exports, too, will increase in proportion to the size of its economy.

Simple gravity models

The hypothetical correlations described above can be tested using a simple gravity approach. The results do indeed indicate that the distance between the industrial country under review and the countries in transition has a significant negative influence on their bilateral trade. Furthermore, there is a positive correlation between the gross domestic product (of both the importing and the exporting country) and the respective trade flows. On the other hand, these factors alone still do not fully explain Germany's relatively strong market position in the central and east European countries under review. Other influences obviously also play a role, and these, together with the factors mentioned above, substantiate Germany's relatively strong position in the central and east European export markets.

The discrepancy between the estimated imports from the respective industrial country – calculated on the basis of the gravity approach explained above – and the actual value of imports (see the table on page 22) can be interpreted as a simple measure of a supplier country's above-average or below-average significance, in relation to its economic size and geographical proximity, for the countries in transition under review. Accordingly, of the countries analysed in this report, Germany, Finland and Italy have a markedly stronger position in the east European markets. The position of French, British and Austrian enterprises in the countries in transition, on the other hand, is somewhat weaker than could be expected on the basis of their distance and economic size.

Relationship between direct investment in and exports to the countries in transition

Timely presence of German firms in eastern Europe

One reason for Germany's relatively strong market position in eastern Europe, even taking account of its geographic proximity and economic size, could be the timely and extensive investment of German companies in the central and east European markets. However, it is particularly difficult to distinguish between cause and effect here. Extensive direct investment in foreign markets can form the basis for successful exports, but, conversely, the expansion of export business can often entail specific types of investment abroad. This applies, for example, to the establishment of distribution, storage and service facilities, which can at the same time form the basis for further sales increases in the respective foreign markets.

Direct investment and foreign trade

To consolidate the market positions achieved and exploit associated cost advantages, especially in central and eastern Europe, many firms also establish their own assembly and production facilities abroad. On the one hand, such facilities replace exports of the respective goods, but, on the other, they fuel the demand for other goods, notably capital goods and intermediate goods as well as services and (complementary and substitute)

end products.[4] It is therefore not always possible to determine clearly the net effect of increased direct investment abroad. However, most empirical studies come to the conclusion that it generally stimulates trade.[5]

Data from individual countries in transition on the foreign trade of foreign enterprises domiciled in the respective countries give some indications that this positive correlation also exists in trade with countries in transition.[6] Polish data, for instance, indicate that in 1996 foreign-owned enterprises accounted for no less than 48 % of Poland's total imports of goods. On the export side, foreign enterprises domiciled in Poland accounted for 38 % of Poland's total exports of goods.[7]

Industrial countries' direct investment in the countries in transition

Consequently, the volume of direct investment in the countries in transition in the nineties could, in fact, help to explain the industrial countries' relative competitiveness in the countries in transition: countries which have achieved a strong position in the countries in transition by acquiring participating interests and through "greenfield investments" are likely to export relatively large amounts to this region. The cumulated direct investment of 14 industrial countries (for which a regional breakdown of balance of payments data is available) in the countries in transition amounted to US $ 36½ billion from 1990 to 1997, and German enterprises accounted for the largest share of this by far. Between 1990 and 1997, their share of the industrial countries' total direct investment in the region is estimated at over 30 %. Thus, the relative position of German enterprises in the countries in transition is similar to Germany's share of the industrial countries' exports to the region. Hungary, the Czech Republic and Poland, where the reform processes have progressed particularly fast and with which Germany maintains very close trading relations, also registered high levels of direct investment from Germany. On the other hand, German direct investment in Russia is relatively low, given the size of the Russian economy.

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4 In the car industry, for example, it can be seen time and again that the production of a certain model abroad and its successful market launch makes the company's entire range of products better known abroad and thus boosts the export of other models to that particular country. In addition, manufacturing abroad can make the foreign consumer identify more closely with the product, and this can boost the company's overall sales.

5 See, for example, Pfaffermayr in a study on Austria (Pfaffermayr, M., Foreign Outward Direct Investment and Exports in Austrian Manufacturing: Substitutes or Complements?, Review of World Economics, Vol. 132, 1996) and Bloomström, Lipsey, Kulchycky in a study on Sweden and the United States (Bloomström, M., Lipsey, R. E., Kulchycky, K., US and Swedish Direct Investment and Exports, in Baldwin, et al., Trade Policy Issues and Empirical Analysis, Chicago, 1988, pages 259-297). A comprehensive overview of the literature available on the connection between direct investment and foreign trade can be found in Cantwell, L. J., The Relationship between International Trade and International Production, in Greenaway, D., Winters, A. L. (eds.), Surveys in International Trade, Blackwell, Oxford, Cambridge, Mass., 1994, and World Trade Organisation, Annual Report, Volume I, Geneva, 1996.

6 In most industrial countries (with the exception of Sweden and the United States), there are no data available on the foreign trade of direct investment enterprises. German direct investment statistics do not show the foreign trade of these enterprises separately, either. Therefore, empirical analyses cannot directly examine what influence the increase in participating interests by German enterprises domiciled abroad has on the exports of the parent companies domiciled in Germany.

7 See *PAIZ, Analiza Wplywu Investycji Zagranicznych Na Polska Gospodarke,* Warsaw, 1996, page 26. However, it should be noted that the direct investment data collected by PAIZ differ from those published by the Polish Central Statistics Office (GUS). The PAIZ figures on direct investment inflows to Poland are substantially higher than those published by GUS, i.e. it cannot be ruled out that the above figures on the foreign trade of direct investment enterprises, which are reported only in the PAIZ statistics, tend to be too high. See Durka, B., Foreign Investments in Poland in 1995 – Overview of Main Tendencies and Opinions, Foreign Trade Research Institute, Working Paper 67, Warsaw, 1996, page 7.

Estimated and actual imports of the countries in transition from industrial countries

1997; in US $ billion

Imports from:	Actual imports Ia	Estimated imports Ie
	Ia > Ie	
Belgium	3.6	2.7
Finland	5.0	2.6
Germany	38.4	25.3
Italy	14.4	11.2
Netherlands	4.9	4.0
Spain	2.8	2.6
Sweden	3.9	3.8
United States	8.9	6.9
	Ia < Ie	
Austria	7.0	11.9
Denmark	2.4	3.0
France	8.3	10.4
Japan	3.3	3.5
Switzerland	2.6	3.3
United Kingdom	6.6	8.8

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The United States is the second-largest investor in the region after Germany.[8] From 1990 to 1995, (more up-to-date data are not yet available for the United States), US enterprises accounted for 16 % of the industrial countries' total direct investment in the countries in transition. With an (estimated) share of around 10 % of the industrial countries' direct investment in the countries in transition from 1990 to 1997, Austria and France share their position as the third most important investors.

Sales and cost motives

The relatively heavy involvement of German enterprises and enterprises from the other industrial countries in the central and east European countries in transition in the nineties was probably not only motivated by potential sales, but also by costs. In particular, low labour costs encouraged the relocation of production plants to the countries in transition. Various studies have determined that for Germany, at least, exchange-rate-adjusted changes in the relative labour costs have a significant influence on the country's direct investment abroad.[9]

Extended gravity approach

The theory that a large stock of direct investment in the countries in transition, i. e. a strong presence of domestic enterprises in the region, can boost the exports of these firms from their home country can be tested using an appropriately extended gravity model. The results of the modified estimation show that the industrial countries' direct investment contributes significantly towards explaining the volume of goods imported by the countries in transition from the countries concerned. The greater the industrial country's direct investment in the respective country in transition in the nineties, the greater the imports of the country in transition from that industrial country. The very high level of German direct investment compared with

8 Owing to the different methods of recording direct investment in the industrial countries' balances of payments, the available data must be interpreted with caution. For the problems regarding the statistical coverage of direct investments and international comparisons see Jost, T., Direct investment and Germany as a business location, Discussion Paper 2/97, Economic Research Group of the Deutsche Bundesbank, June 1997. In addition, the cumulated net investment reported in the balances of payments deviates markedly from the stocks of direct investment in the countries in transition published by several countries. Estimates by the UNCTAD indicate that, according to the stock statistics, the United States is the largest "direct investor" in several countries in transition (see United Nations Conference on Trade and Development, World Investment Report 1998, page 273). Owing to the different valuation methods, however, stock figures on direct investment are even less comparable internationally than balance of payments figures.

9 See, for example, Deutsche Bundesbank, Development and determinants of international direct investment, Monthly Report, August 1997.

Direct investment of the 14 industrial countries in selected countries in transition *

Item	1990	1991	1992	1993	1994	1995	1996	1997	1990–97
Total (in US $ billion)	0.9	1.8	3.0	4.9	4.2	9.2	7.0	5.8	36.7
Shares of individual countries (in %)									
Germany	17.8	14.0	35.0	29.6	45.1	30.1	(50.7)	(41.5)	(36.8)
United States	16.9	11.7	15.7	25.1	12.1	14.5	.	.	.
Austria	43.0	27.6	15.1	10.6	10.2	6.7	(5.0)	(14.8)	(11.1)
France	5.0	11.7	11.3	5.8	5.9	14.4	(10.9)	(15.1)	(11.1)
United Kingdom	0.2	0.3	1.9	0.7	4.8	0.9	(2.8)	.	.

* Data on transactions according to the balance of payments; source: OECD, International Direct Investment Statistics Yearbook 1998; for 1996, no data for the United States; for 1997, no data for the United States and United Kingdom. The percentages in brackets were calculated without these data and are therefore distorted upwards.

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that of the other industrial countries apparently fostered Germany's success in exporting to the region.

Influence of the specific breakdown of Germany's exports on its foreign trade with the countries in transition

Breakdown of the industrial countries' range of goods

Apart from the factors indicated above, the individual industrial countries' competitiveness also depends on the extent to which the breakdown and quality of their range of goods meet the specific demands of the countries in transition. Rough data on the breakdown of imports show that most of the goods imported by the countries in transition are capital goods in the fields of mechanical engineering and transport (SITC 7), chemical products and intermediate goods. Germany is a leading world supplier of capital goods in the above-mentioned fields.[10]

Measure of the similarity between the industrial countries' range of exports and the import demand of the countries in transition

The export-import similarity index (EIS) derived by Linnemann/Van Beers (1988) from the export similarity index developed by Finger/Kreinin (1979)[11] is a measure of the de-

10 A comprehensive study on Germany's technological productivity has shown that Germany plays a leading role worldwide in the supply of high-tech goods (with above-average, but not overly great demands on research and development), especially in the fields of chemistry, mechanical engineering, car manufacture and electrical engineering. See NIW, DIW, Fraunhofer Institute and ZEW, *Zur technologischen Leistungsfähigkeit Deutschlands,* report to the Federal Ministry for Education, Science, Research and Technology, December 1995, pages 35–40.

11 Linnemann, H., Van Beers, C., Measures of Export-Import Similarity, and the Linder Hypothesis Once Again, Review of World Economics, Vol. 124, 1988, pages 445–457, and Finger, J. M., Kreinin, M. E., A Measure of Export Similarity and its Possible Uses, The Economic Journal, Vol. 89, 1979, pages 905–912.

Bilateral EIS values *

Country	United States	Japan	Austria	Belgium	Denmark	Finland	France
Baltic states	0.55	0.45	0.61	0.62	0.55	0.46	0.66
Bulgaria	0.44	0.33	0.45	0.46	0.41	0.34	0.49
Czech Republic	0.63	0.54	0.70	0.61	0.55	0.49	0.68
Hungary	0.63	0.55	0.66	0.56	0.51	0.46	0.64
Poland	0.64	0.50	0.66	0.58	0.55	0.47	0.66
Romania	0.50	0.40	0.50	0.48	0.49	0.40	0.51
Russia	0.47	0.34	0.43	0.50	0.53	0.38	0.51
Slovakia	0.61	0.50	0.62	0.61	0.59	0.46	0.66
Slovenia	0.62	0.52	0.68	0.66	0.51	0.47	0.69
Arithmetic average	0.57	0.46	0.59	0.57	0.52	0.44	0.61

Country	Germany	Italy	Nether-lands	Spain	Sweden	Switzer-land	United Kingdom
Baltic states	0.62	0.57	0.60	0.61	0.52	0.42	0.63
Bulgaria	0.47	0.46	0.42	0.44	0.39	0.35	0.46
Czech Republic	0.72	0.67	0.58	0.61	0.57	0.52	0.67
Hungary	0.66	0.59	0.58	0.55	0.53	0.47	0.65
Poland	0.69	0.65	0.57	0.61	0.57	0.51	0.65
Romania	0.53	0.54	0.49	0.48	0.45	0.44	0.52
Russia	0.47	0.46	0.46	0.46	0.47	0.36	0.47
Slovakia	0.68	0.58	0.54	0.57	0.60	0.48	0.64
Slovenia	0.72	0.65	0.61	0.66	0.57	0.47	0.63
Arithmetic average	0.62	0.58	0.54	0.56	0.52	0.45	0.59

* Export-import similarity index by Linnemann/Beers (1988) as a measure of the similarity between the breakdown of goods imported by the respective countries in transition and the breakdown of goods exported by the industrial countries. Calculated using the following equation:

$$EIS_{ji} = \sum_{k} \min \left(EX_{jk} \, I \sum_{k} EX_{jk} \, , \, IM_{ik} \, I \sum_{k} IM_{ik} \right)$$

EX_{jk} = Exports of good k by country j (industrial country)
IM_{ik} = Imports of good k by country i (country in transition)

The data are derived from the United Nations' COMTRADE databank. They comprise data on the breakdown of goods imported by nine countries in transition and the breakdown of goods exported by 14 industrial countries at the three-digit SITC level recorded in 1997. Around 260 different goods/categories of goods are involved.

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gree of similarity between the breakdown of goods exported by the individual industrial countries and the imports of the countries in transition. The index can have a value of between 0 and 1. If the two countries' trade patterns differ completely ($EIS_{ji} = 0$), there is no trade between the two countries under review because the potential trading partner has no demand for any of the goods offered by a certain country. If there are similarities in the ranges of goods ($0 < EIS_{ji} \leq 1$), trade is possible. In the case of $EIS_{ji} = 1$, the export supply patterns and import demand patterns are completely identical. The EIS value can also be interpreted as a measure of the bilateral sales potential of the exporting industrial country in the importing country in transition. If $EIS_{ji} = 1$ (0) or close to 1 (0), the potential trade flows between the two countries are great (small) and the expected intensity of trade is high (low).[12]

High degree of similarity between German supply of export goods and demand of the countries in transition

The bilateral EIS values in the table on page 24 indicate that the breakdown of Germany's exported goods is most similar to the breakdown of goods imported by the countries in transition (the EIS value is 0.62). With an EIS value of 0.61, the French supply of exported goods also matches the import demand of the countries in transition fairly well. On the other hand, there are substantial differences between the breakdown of goods exported by Finland, Switzerland and Japan and the import demand pattern of the countries in transition (EIS values: 0.44, 0.45 and 0.46). Of all the countries under review, the patterns of German exports and of Slovenian and Czech imports are the most similar (EIS value: 0.72 in each case). The greatest differences exist between Japan's supply of exported goods and Bulgaria's import demand (EIS value: 0.33).

Extended gravity approach

The gravity equation, broadened to cover direct investment and the EIS measure, reads as follows:

(4) $im_{ij} = \alpha_0 + \alpha_1 y_i + \alpha_2 y_j + \alpha_3 d_{ij} + \underset{>0}{\alpha_4 fdi_{ij}} + \underset{>0}{\alpha_5 eis_{ij}} + \mu_{ij}$

where fdi_{ij} denotes the (logarithmic) direct investment of industrial country j in country in transition i and eis_{ij} denotes the respective EIS index in logarithmic form. The estimates led to the following results:

α_0	5.58 (12.51)	6.70 (15.44)	5.71 (12.84)
α_1	0.67 (13.01)	0.83 (18.75)	0.68 (13.28)
α_2	0.72 (13.15)	0.77 (12.49)	0.66 (10.76)
α_3	– 0.99 (– 11.53)	– 1.13 (– 12.22)	– 0.90 (– 9.36)
α_4	0.14 (5.18)	–	0.14 (4.94)
α_5	–	0.88 (2.48)	0.67 (2.05)
Corr. R^2	0.86	0.84	0.86
Standard error	0.51	0.55	0.50

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Extended gravity approach

If the bilateral EIS values are included in the gravity approach, a significant influence of the breakdown of goods is discernible. The greater the similarity between the import demand pattern of a certain country in transition and the breakdown of an industrial country's potential exports, the greater the imports of the country in transition from the respective industrial country. In addition to the other variables, the export-import similarity measure therefore contributes towards ex-

12 See Biessen, G., The Reemergence of Poland on West European Markets: A Gravity and Cos Analysis, Foreign Trade Research Institute, Warsaw, Working Paper No. 65, 1997, page 13 f.

plaining the observed intensity of foreign trade between industrial countries and countries in transition. Along with the high level of German direct investment in central and eastern Europe, the relatively high degree of similarity between the German supply of exported goods and the import demand patterns of the countries in transition is therefore a further factor that helps explain Germany's relatively strong position in the countries in transition.

Price competitiveness and German exports to the countries in transition

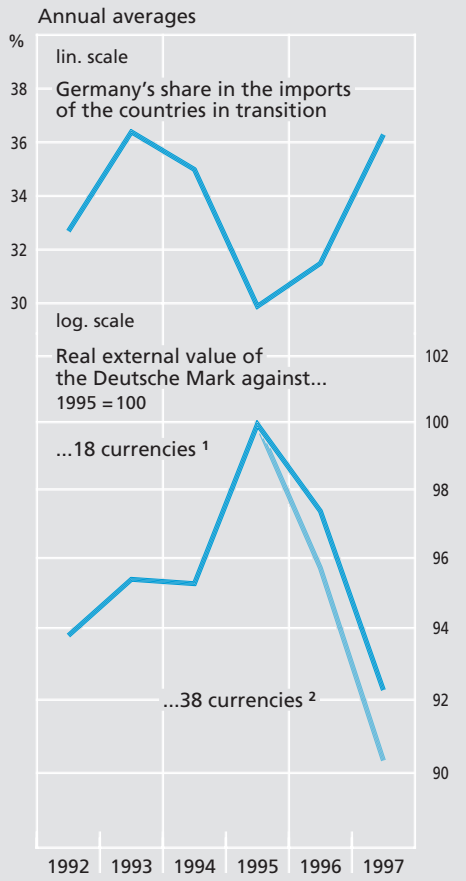
Price competitiveness

Finally, Germany's position in the markets of the countries in transition probably also depends on its price competitiveness compared with that of its main competitors in the other industrial countries. At all events, various empirical studies have shown that, other things being equal, a deterioration in price competitiveness (as evidenced in a real appreciation of the respective domestic currency) curbs exports, whereas an improvement in price competitiveness (real depreciation of the domestic currency) fosters export growth.[13]

Improvement in price competitiveness since 1996

As can be seen from the chart on this page, German exports to the countries in transition also seem to react negatively to a deterioration in price competitiveness. At all events, Germany's share of the imports of the countries in transition from industrial countries fell substantially (from 35 % to 30 %) in 1995, when excessive wage increases and a pronounced weakness of the dollar adversely affected Germany's competitiveness. In the following two years, as the previously strong appreciation of the Deutsche Mark tailed off and wage increases remained muted, its relative competitive position increased again (to 36½ %). Germany's strong position in the countries in transition in 1997 was apparently fostered by the improvement in price competitiveness since 1996. As expected, the first

Germany's competitive position in the countries in transition and the real external value of the Deutsche Mark



1 Real external value of the Deutsche Mark against the currencies of 18 industrial countries on the basis of the price indexes of total sales. — **2** Real external value of the Deutsche Mark against 38 currencies on the basis of consumer prices.

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13 See Deutsche Bundesbank, Exchange rate and foreign trade, Monthly Report, January 1997, pages 41–59.

econometric estimates carried out on this basis likewise indicate that this correlation played a significant role in the development of German exports to the countries in transition.[14]

Conclusion

The countries in transition have substantially expanded their foreign trade since their borders were opened. Germany has had a large share in this from the outset. This development was fostered by "natural" advantages such as Germany's proximity to the young markets in eastern Europe. In addition, sales of German goods in the region were probably also boosted by the timely and extensive investment of German enterprises in the countries in transition. Furthermore, the particular range of Germany's potential exports with its focus on higher-quality capital goods, especially in the fields of mechanical and electrical engineering, chemicals, and car manufacture, was apparently especially well suited to meet the demands of the countries in transition.

Fluctuations in Germany's price competitiveness likewise influenced the development of German exports and Germany's market share in the countries in transition. The comparative strength of the German economy in 1997, the end of the period under review, was fostered by the marked improvement in price competitiveness in 1996 and 1997.

Germany's relative position in the countries in transition was certainly also influenced by other factors, although these could not be examined in detail here owing to a lack of comparable data on competitors. Last but not least, the government's export guarantees via "Hermes" insurance cover guarantees, which were sometimes extensive, probably also boosted German exports to the countries in transition. Furthermore, several "soft" explanatory factors such as language (German is relatively wide-spread in the countries in transition, even compared to English) and Germany's comparatively close historic links to its eastern neighbours might also have played a role.

14 In these studies, Germany's competitiveness in terms of price was measured using the real external value of the Deutsche Mark as calculated by the Deutsche Bundesbank on the basis of the price index of total sales against the currencies of 18 industrial countries. The real external value of the Deutsche Mark against the currencies of 18 industrial countries indicates changes in Germany's price competitiveness vis-à-vis its competitors in the other industrial countries; however, it is not a measure of changes in Germany's price competitiveness or that of the other industrial countries vis-à-vis the domestic economy of the countries in transition. This competitive situation is taken into account in the real external value of the Deutsche Mark against the currencies of 38 industrial and developing countries. This measure, which was introduced some time ago by the Deutsche Bundesbank, also contains the currencies of the most important countries in transition. However, this extended real external value is available only from 1995. As shown in the chart on page 26, the trend in the real external value of the Deutsche Mark against the currencies of the 38 countries is similar to that against the currencies of 18 industrial countries. For the calculation of the real external value of the Deutsche Mark, see Deutsche Bundesbank, Updating the calculation of the external value of the Deutsche Mark and adjusting it to the conditions of European monetary union, Monthly Report, November 1998, pages 53–67.